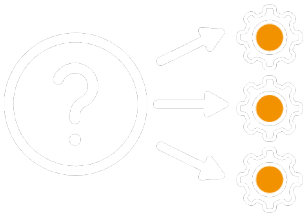

ROOT CAUSE ANALYSIS (RCA) FOR COMPLEX SYSTEMS

Course Descriptions

Systems engineering is focused on managing the development of a product or system rigorously to ensure failure-free operation, ideally for its whole life. Try as we might though, for many reasons things do fail. The complexity of many of the systems we design, combined with a complex and sometimes unpredictable environment, is such that emergent behaviour can have unforeseen consequences that have to be rectified. To address these problems we have to understand the root causes of such failures and in order to do this successfully, and avoid wasting precious time and resources, we have to approach this complex task in a structured way. We have to understand not only the technical aspects of the problem, but the political aspects associated with the involved stakeholders. The basic systems engineering approach and systems thinking methodologies can help us do that.

This course is presented primarily as an interactive workshop where participants get to solve a practical problem based on the failure of a real system. By working on an unfamiliar problem, the focus on the method is strengthened and its advantages are highlighted. An initial review of systems engineering principles that apply and an in-depth analysis of the problem solving techniques employed in these situations

equips the participants with the tools necessary to address the challenge presented in the workshop. The workshop provides the participants with the opportunity to work through a real failure case and present their findings. The outcome of the actual investigation is presented and discussed in a final review that enables the participants to evaluate their own performance.

Learning Outcomes

• Participants understand systems engineering principles that are applicable in complex problem solving.
• Participants understand the importance of considering stakeholder perspective and motivation.
• Participants develop an awareness of analysis methods and tools that can be applied in solving complex technical problems.
• Participants understand how to approach complex technical problems holistically.
• Participants are able to put the knowledge into practice and successfully identify the root cause of the actual system failure resented in the workshop.

Who Should Attend?

• Systems engineers
• System architects
• Project managers
• Development engineers
• Reliability engineers
• Quality engineers
• Integration, Verification and Validation Engineers
• Product owner

Course Rates

Early Bird: 2025 CHF | Regular: 2250 CHF

Duration

3 days

Delivered By

Marco Serra

Marco’s professional experience, built over almost 30 years of working with clients in North America, Europe and Southern Africa, spans diverse roles in the aerospace, automotive, defence and energy industries. For example, as Systems Engineer Marco was involved in the initial conceptual development and technology transfer assessment of a sample handling and analysis system intended to receive and analyse material returned to Earth on Nasa’s Mars Sample Return Mission. Marco also spends significant time consulting in the Oil & Gas and Energy industries providing system and component design support, conducting failure investigations, providing technical expertise in legal disputes, validating system designs, and developing analysis methodologies for complex fluid-mechanical simulations. More recently, Marco has been working on the thermomechanical design of optical terminals for inter-satellite communications.

Marco holds a Masters Degree in mechanical engineering from the University of Pretoria, South Africa (1993). He also holds a Masters Degree in Engineering and Management from the Massachusetts Institute of Technology, USA (2002), with a focus on Systems Architecture, Systems Engineering, and System and Project Management.